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10 Charles Wolf, Jr.

11 January 1980

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January 1980

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POLICY ANALYSIS AND DECISIONMAKING*

Charles Wolf, Jr.

I will begin with a few general observations about policy analysis, and then go on to consider some of the broad questions with which this symposium is concerned: the role of policy research institutions in society and in decisionmaking, their role in generating social and scientific technology, the management of policy research institutions, etc. My remarks will be based mainly on the experience of The Rand Corporation, though they will also draw to a more limited extent on some acquaintance with other institutions in the United States, Europe and Japan.

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I. Characteristics of Policy Analysis

Good policy research can be *likened* to a camel: *difficult* to describe but *easy* to recognize. In the following remarks, I will try to identify a number of characteristics of policy research in general, and *good* policy research in particular. I do not intend these characteristics to be interpreted as dogmatically as they may sound. Rather, they should be interpreted as propositions that are more likely to apply to good policy research than to other kinds, although in practice all policy research is likely to depart in some respects from these exemplary characteristics.

In general, policy research views a problem as a system of interacting parts, and proceeds through a series of steps: First, identifying the significant interactions characterizing the system--that is, building a more or less formal model that describes how the system works; second, specifying the policy objectives as precisely as possible; third, designing various programs or policy alternatives; and finally, comparing and testing the performance of these alternatives in terms of an explicit criterion, or several criteria, of choice that relate the alternatives to the policy objectives.

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* Notes prepared for presentation at a Symposium on "Policy Analysis as applied to High-Level Decision-Making," organized and sponsored by Orinoquia Asociacion Civil, in Caracas, Venezuela, January 29-31, 1980.

The testing should explicitly consider *uncertainties* in performance: for example, uncertainties relating to the probabilistic nature of the model, uncertainties relating to the data used in the analysis, and uncertainties that may result from possible countermeasures by an intelligent adversary (e.g., organizations, firms, or foreign countries) having different objectives from those specified in the study.

Testing of the alternatives should also explicitly consider *externalities* or side effects that may accompany each of the various alternatives: for example, the environmental, safety, and health side effects of generating electric power through coal, or nuclear, or synthetic fuels.

Usually, the testing process consists of running the alternatives through the model, and choosing as the preferred alternative that which minimizes the cost of achieving a specified objective, or maximizes a particular objective for specified costs. The policy or program that meets this test then becomes the recommended course of action within the confines imposed by the original operational model. In cases, and they are likely to be numerous, where trade-offs among the components of the objective function cannot be specified, good policy analysis should display the full vector of differential payoffs associated with the various alternatives. In the absence of pure dominance (that is, one alternative which performs at least as well as other alternatives with respect to *all* of the component objectives, and better on *some* of them), good policy research should display the inconclusive nature of the results through some sort of multi-dimensional scoring matrix which exhibits the program or policy alternatives, the dimensions of the utility or objective function, and the outcomes for each of the alternatives with respect to these dimensions.*

*One of my Rand colleagues, Bruce Goeller, has contributed significantly to the development of this device in connection with the analysis of water resource policies in the Netherlands. See, for example, his R-2121/1-NETH, *Protecting an Estuary from Floods--A Policy Analysis of the Oosterschelde: Vol. 1, Summary Report*, December 1977. Algorithms also exist for reducing these multi-dimensional utilities and outcomes to a single payoff scalar through Delphi-type processes. Howard Raiffa at Harvard has pioneered in this area. I have some reservations about the merits of applying these procedures, or at least about the way they usually have been applied.

Good policy analysis generally focuses on a *real* policy or program issue. By this, I mean that it addresses a concrete problem connected with some specific activity of the public sector; for example, relating to defense budgets and forces, to developing new technology or improving existing technology, to educational programs and how to improve their payoffs, to health care or health insurance, to unemployment, etc. The *real* problem, then, is how an existing program that purports to address one of these issues can be improved, or a new program that is better than the existing one can be developed, perhaps even by eliminating or reducing the government program that is presently in effect.

As examples of what I mean by "real" problems, let me cite a few in the United States that I am familiar with at Rand: (1) comparing the differing effects and relative effectiveness of taxes on gasoline, or tariffs on imports of crude oil, in promoting energy conservation, and providing incentives to develop new sources of energy supply; (2) devising economically efficient, as well as politically acceptable, means of promoting standardization and interoperability of weapons systems in NATO; (3) comparing the effects of limiting government spending or taxing authority on the scale and composition of social programs; (4) analyzing the efficiency and the practicability of substituting capital and new technology for labor in military activities, in the light of the increasing relative costs of labor in the volunteer armed force; (5) evaluating the effects of housing allowances to renters or buyers on the supply and on the price of housing, etc.

The point about these examples is that in each case there is a specific program focus to the research problems. At the same time, it is worth noting and emphasizing that sometimes, perhaps often, a major benefit of the analysis lies simply in an accurate *description* of the issue: collecting and arranging the data; systematically tracing the effects--including side effects--of actions, experience, and programs already under way or completed; and identifying questions and issues which we've not yet able to answer. As one example, I would cite some recent Rand research relating to the development

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of synthetic fuel technology. This research focused *descriptively* on the dramatic cost-escalation tendencies of "pioneer" manufacturing plants in the development of new technology in the U.S.* The research has had a significant effect, I believe, on discussion, legislation, and executive action in connection with the development of synthetic fuels in the United States.

There are many points about policy research methods that we may discuss later in this symposium relating, for example, to types of models, large-scale versus small-scale models, the role and uses of "expert" qualitative judgments and opinions, etc. I will make one initial comment here.

There is an increasing tendency in policy research to analyze large data files involving thousands and even millions of separate observations, e.g., census data, social security data, data on health insurance claims, military manpower data, food and weather data, etc. These large data sets require extensive use of computers: to probe the data for relationships among variables; and to test hypothesized relationships in order to estimate the parameters of formal models, and thereby to help in comparing and evaluating alternative policies or programs. While this tendency is strong and increasing, and is, in general, highly desirable, it is subject to two particular shortcomings. One shortcoming is the fundamental assumption underlying this analysis that the relationships discovered in the past data will continue in the future. The assumption is unavoidable, as well as questionable; the analyst, and the decisionmaker who makes use of the analysis, should be sensitive to it.

The other shortcoming lies in a tendency of some policy analysts to work on those problems that the available data conveniently cover, rather than to search for and develop data to help in working on problems that are genuinely important. The parable that comes to mind is that of the man looking for his key under the street light, rather than where the key actually fell.

*See Ed Merrow, et al, *A Review of Cost Estimation in New Technologies: Implications for Energy Process Plants*, R-2481-DOE, The Rand Corporation (July 1979).

An important characteristic of policy analysis that I have not yet mentioned is its typically interdisciplinary nature. In policy research, the issues, models, data, and policy alternatives usually don't stay conveniently within disciplinary lines. The physical and engineering sciences, economics, social and behavioral and organizational disciplines and paradigms are all relevant. Trying to define the problem so that it falls neatly within one discipline is likely to make the results less relevant to public policy.

A distinction should be made between *interdisciplinary* and *multidisciplinary* research. In undertaking and organizing policy research, it is easiest, and hence customary, to divide the work into segments with "inputs" being supplied *separately* by engineers, physicists, economists, and social and political scientists. The result usually is separate chapters or appendices that are more or less free-standing and hard to relate to one another. This is what I mean by *multidisciplinary* research. By contrast, real *interdisciplinary* research requires that members of the research team genuinely interact, that they absorb enough of each other's paradigms and vocabularies so that their communication and interaction improves over the life of the study. As a consequence, the modeling, comparisons among alternatives, and the policy results really integrate and synthesize the contributions of the several disciplines.

While this point is frequently acknowledged in relation to synthesis between economics and other social science disciplines, it applies equally for a wide range of policy issues with respect to physical science, engineering, and technology, as well as the other disciplines. For example, if one is working on such policy issues as forecasting the costs of developing synthetic fuels, or on the capital-labor substitutions involving new technology that I alluded to earlier, it is essential to know the operating details of the associated technologies, if the results are to be genuinely useful for policy purposes.

2. Implementing Policy Research: Implementation Analysis

My previous remarks included a brief summary of the standard ingredients and sequence involved in policy analysis: theory, model formulation, parameter estimation from the data base, designing and evaluating policy alternatives, and comparing and choosing among the alternatives. This list omits one of the crucial ingredients involved in applying and implementing policy research: implementation analysis.* This key ingredient, which I have referred to elsewhere as "the missing chapter" in most policy studies, is concerned with the following sorts of key questions: If the policy results of the study stand up to careful scrutiny, then *who* needs to do precisely *what* by way of *next steps*? What *organization(s)* is (are) responsible for which next steps? What *sources of inertia and opposition* are these next steps likely to encounter? How can these resistances be overcome, and at what cost?

Answers to these questions need to be fed back into the re-evaluation of alternatives in order to compare the relative difficulty and feasibility of carrying them out. Indeed, sometimes the policy alternative which looks preferable when such implementation issues are ignored looks quite impractical when they are taken directly into account.

Implementation analysis is beginning to receive more consideration and attention among policy researchers, especially those concerned with methodology, although it is still rarely incorporated into actual studies. The fact that such implementation questions are so rarely taken into account is probably the principal reason why many good policy studies rarely get translated into real policy changes.

A related factor that also contributes to the lack of impact of most policy studies is the absence of an essential, though not necessarily large, group of analytically sophisticated people *in situ*.

* Charles Wolf, Jr., "A Theory of Nonmarket Failure: Framework for Implementation Analysis," *Journal of Law and Economics*, Vol. XXII, April 1979.

the client agency or organization. Such people, who are capable and motivated to stay in close touch with the study, presuming it is done *outside* the agency, are essential to help in translating its results in terms that will be directly usable and applicable in the responsible agency or agencies.

The subject of implementation analysis, as I have indicated, is presently receiving increased attention. In brief, implementation analysis requires the following steps:

- A. Identification of the "players," organizations, and individuals whose interest and activities are most directly concerned with the policy problem under examination. As part of this identification process, the precise interests, standard operating procedures, and resources available to these "players" need also to be explicitly and fairly identified.
- B. Estimating the counter-moves, resistances, and distortions that are likely to result from any given policy, say X_i , as a result of the players and interests noted in (A) above.
- C. Consideration of the methods and costs, including political "bargaining" costs, of meeting, adjusting to, compromising, or surmounting these resistances, in order to obtain an adjusted outcome to be expected from Policy X_i .
- D. If the costs uncovered in (C), or the adjustment in the probable outcome associated with a given policy are large enough, the relative preferability of the several alternatives may have to be changed. In other words, a policy that looked preferable in the absence of such implementation analysis may appear to be distinctly "second best," or even infeasible, once this analysis has been undertaken.

One of the concerns of people who have lately been addressing the issue of implementation analysis is whether the extension of policy research to include it does not perhaps usurp the proper function of responsible political decisionmakers in the public sector. It can be argued that the balancing of forces and conflicting interests, ethical values, distributional and equity considerations involved in implementation should more properly be left to those who are politically responsible for making such judgments, and that the analyst is neither professionally nor temperamentally equipped to try to make them instead.

I think this argument is specious. In one sense, there is small likelihood that analysts can really "usurp" this function: responsible and effective decisionmakers will, in any event, exercise their own judgment on these questions of implementation. Rather, the research issue is whether the analyst should attempt to help in structuring the implementation problem through the sort of steps and procedures that I have outlined above, recognizing full well that in the final event this part of the analysis will be subject to especially careful scrutiny and "second-guessing" by the responsible decisionmakers, as indeed it should be.

In any event, I know of no policy study, either at Rand or elsewhere, where an exemplary job of implementation analysis has yet been done. This is an aspect of the field that remains to be developed.

3. Policy Research Institutions (PRI)

My few comments on this topic are inevitably weighted by my long association with Rand. I can only hope they will not seem too parochial, as a result.

First, it seems to me highly desirable to have *several* institutions actively involved in policy research. Several institutions are desirable because competition is healthy in this field as in others. Competition among institutions contributes to higher professional standards, reduces the risks of biased work--or, at least, biased work that is not exposed--and promotes experimentation and innovation. The latter is particularly desirable in a field like this, where the best ways of producing output are neither well-known nor stationary.

If a country, and perhaps Venezuela is an example, believes its needs for policy research are too limited to sustain several analytical institutions, it should encourage competition by institutions from other countries, at the same time as it nurtures one or more indigenous analytic institutions.

As to the desirable *number* of institutions, that depends on market size and on conditions of production which, I believe, entail major *dis*-economies of scale beyond some point.

Second, there are several organizational attributes associated with effective work in this area that should be kept prominently in view in setting up new institutions. Some of these attributes are implicit in my earlier comments: for example, the importance of interdisciplinary work, and an environment and staff congenial to it.

With respect to institutions doing, or planning to do, policy research there are two other attributes that I believe are of primary importance. One of these is *organizational independence*, and the other is "close-in" *access to information*. Without a substantial measure of both, the results are likely to be nugatory, and sometimes of negative value. It would take more time to develop this argument fully than I have, so I will confine myself to a few comments about it.

Without organizational independence, the task of producing research that not only is relatively objective, but is also *perceived* by others to be objective, becomes extremely hard--and perhaps impossible.

Without direct access to information that the policy community itself uses, the task of producing research relevant to policy and to the policy maker's perspective becomes equally difficult. This is likely to be so even, and perhaps especially, if the research in question concludes that a *different* perspective--concerning goals or programs--should be adopted. If major changes are to have a reasonable chance of implementation, those proposing the changes need to understand how the problem looks from the "inside," and this understanding is unlikely without especially good access to information.

It is important to realize that there is a tension between these two attributes: government agencies are likely to be reluctant to provide full informational access to research institutions that are highly ⁱⁿdependent; and institutions that have "close-in" access run

the risk of compromising, or *appearing* to compromise, their independence. The tension is real, not just apparent. Keeping it within tolerable bounds is hard. I can't provide a formula for doing this, except to say that the task requires intelligent, resourceful, forceful, and responsible research management. If that blend seems formidable, as well as intangible, I can only say that it *seems* that way because, in fact, it *is* that way.

4. Policy Research Institutions and Decisionmaking: Some Specific Issues

One of the key issues that arises in the relationship between policy analysis and "high-level decisionmaking" is *communication*: how to communicate the results of policy research in a form or forms that will be understandable and useful to various audiences: technical audiences; high-level, usually less technical, audiences (often, there's an inverse relationship between "level" and technical proficiency); the larger public audiences; etc. One important device for doing so is the research "briefing": a summary digest of central points, generally accompanied by a set of briefing charts, outlining these points. In the remainder of my remarks, I propose to use this style of presentation to address some of the questions which Dr. Curiel and his colleagues have listed in the original agenda for this symposium.

My comments will touch on the following subjects:

- (1) Policy Research Institutions (PRI) and Decisionmaking;
- (2) PRI as Generators of Social and Scientific Technology;
- (3) Academic *versus* Policy Research;
- (4) PRI: Inside or Outside Government?;
- (5) Setting the Agenda for Policy Research;
- (6) Management of PRI;
- (7) Analysis *versus* Advocacy. .

My comments on each of these specific topics will be very brief, generally confined to making a few points as a basis, I hope, for later discussion.

(1) Policy Research Institutions (PRI) and Decisionmaking

- a. Policymaking a process: many participants; multiple decisions; continuity.
- b. Need for policy analysis reflects complexity of problems, e.g., energy, economic development, health care, technology transfer.
- c. PRI provide one type of input to decisionmaking: data and description; alternatives/options; evaluation (final role of "judgment calls").
- d. Role of policy analysis in clarifying, "educating," and consensus-building; examples: synfuels; fiscal limitations.

(2) PRI as Generators of Social and Scientific Technology

- a. Infrequent, but important.
- b. P.A. more often addresses efficient use and combinations of *existing* technologies.
- c. But comparison of alternatives sometimes leads to invention; examples: long-chain polymers and "slippery water," ICBMs, RPVs; "gaming" (man-computer interactions), Delphi, scenarios.

(3) Academic versus Policy Research

- a. Different, but complementary rather than "versus."
- b. "Basic" versus "applied" research: a continuum
- c. Distinctive characteristics of policy research:
 - . concrete policy/program focus
 - . interdisciplinary
 - . equity as well as efficiency concerns
 - . implementation and political feasibility
- d. Importance of methodological (tool-building) work in PRI

(4) PRI: Inside or Outside Government?

- a. Importance of independence (reality and appearance)
- b. Importance of "close-in" access
- c. Tension between (a) and (b)
- d. CPRS in Britain: an exception?
- e. If PRI outside, some principles: sustained contact with "inside"; first communication of results to "insiders"; pluralism of government agencies

- (5) Setting the Agenda for Policy Research
 - a. Client-provided (risks and benefits)
 - b. Self-selected (also, risks and benefits)
 - c. Combinations
 - d. Internal process of agenda setting (Rand experience)
- (6) Management of PRI: Some General Principles
 - a. Avoidance of hierarchy ("flatness" of administrative structure)
 - b. Internal communications
 - c. Mobility and serendipity
 - d. Research responsibility
 - e. Review and quality control
 - f. Rand's experience: from linear to matrix management
- (7) Analysis versus Advocacy
 - a. The case for advocacy (adversary proceedings, "market" for ideas, the legal model)
 - b. The case for analysis (with *constrained* advocacy): substantive and tactical
 - c. Rand's experience (the new Institute for Civil Justice as a change)

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